CLAIMS:

1.   A multi-query data visualization process comprising:

inputting a plurality of query objects into a data processing device;

identifying features within each of the plurality of query objects that allow comparison to a body of data stored in a database;

determining relative relationships between each of the plurality of query objects and the body of data; and

displaying points along a plurality of rays, wherein a position of each of the displayed points corresponds to the determined relative relationship between each respective one of the plurality of query objects and the body of data.

2.   The process of claim 1, wherein displaying includes placing a small graphic entity at an end of each of the plurality of rays to represent a respective one of the plurality of query objects.

3.   The process of claim 1, wherein displaying includes locating the plurality of rays to have a common origin.

4.   The process of claim 3, wherein displaying includes locating the plurality of rays to radiate outwardly from the common origin at equally-spaced angles from one another.

5. The process of claim 1, wherein displaying includes locating the plurality of rays to have a common origin and further comprising determining a critical distance from the common origin, wherein points on the plurality of rays falling within the critical distance meet or exceed a relevancy threshold and points on the plurality of rays outside the critical distance do not meet the relevancy threshold.

6. The process of claim 5, further comprising adjusting the critical distance in response to user input.

7. The process of claim 1, further comprising:

re-determining relative relationships between each of the plurality of query objects and the body of data in response to user input; and

rearranging the positions of the displayed points in response to re-determining.

8.   The process of claim 1, further comprising:

deleting an element from the body of data in response to user input;

re-determining relative relationships between each of the plurality of query objects and the body of data in response to deleting; and

rearranging the positions of the displayed points in response to re-determining.

9.   The process of claim 1, wherein determining comprises accessing data corresponding to the occurrence of textual information within a plurality of documents and displaying comprises depicting usage of the textual information within the documents corresponding to portions of the plurality of query objects.

10.   The process of claim 1, wherein determining comprises:

organizing data in the database and the plurality of query objects in an n-dimensional space; and

reducing a number n of dimensions in which the data in the database and the plurality of query objects are organized to two dimensions using a Sammon projection.

11.   The process of claim 1, wherein identifying comprises representing each of the plurality of query objects and each datum in the body of data as an n-dimensional vector in an n-dimensional vector space.

12.   The process of claim 11, wherein determining comprises calculating a similarity measure between each of the plurality of query objects and each datum of the body of data using some portion of the n-dimensional vectors.

13.   The process of claim 12, wherein determining further comprises:

reducing a number n of dimensions in which the body of data and the query objects are represented to three or fewer dimensions using a multi-dimensional scaling method, where the similarity measures between each of the plurality of query objects and the body of data are weighted more heavily than the similarity measures among data within the body of data; and

wherein displaying comprises displaying points corresponding to the plurality of query objects and points corresponding to the body of data according to the three or fewer dimensions.

14. The process of claim 1, wherein displaying further comprises displaying points corresponding to data from the database along each of the plurality of rays in a two dimensional display, wherein positions of the displayed points correspond to the relative relationships.

15. The process of claim 1, wherein determining comprises:

determining thematic boundaries within each element contained in the database;

breaking elements into subelements at the determined thematic boundaries;

determining relative relationships between each of the plurality of query objects and the subelements; and

displaying points corresponding to the subelements along each of the plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

16.   The process of claim 1, wherein determining comprises:

breaking elements into subelements;

determining relative relationships between each of the plurality of query objects and the subelements; and

displaying points corresponding to the subelements along each of the plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

17.   A data visualization apparatus comprising:

an image device configured to provide a visual image; and

digital processing circuitry coupled with the image device and configured to:
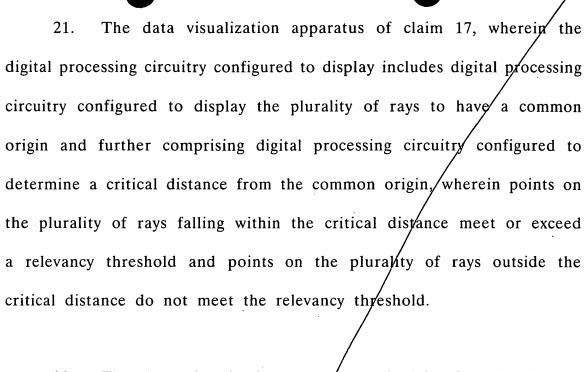
input a plurality of query objects;

identify features within each of the plurality of query objects that allow comparison to a body of data stored in a database;

determine relative relationships between each of the plurality of query objects and the body of data; and

control the image device to depict points corresponding to data from the database along each of a plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

18.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to display includes digital processing circuitry configured to display a small graphic entity at an end of each of the plurality of rays to represent a respective one of the plurality of query objects.

19.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to display includes digital processing circuitry configured to display the plurality of rays to have a common origin.

20.   The data visualization apparatus of claim 19, wherein the digital processing circuitry configured to display includes digital processing circuitry configured to display the plurality of rays to radiate outwardly from the common origin at equally-spaced angles from one another.

21.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to display includes digital processing circuitry configured to display the plurality of rays to have a common origin and further comprising digital processing circuitry configured to determine a critical distance from the common origin, wherein points on the plurality of rays falling within the critical distance meet or exceed a relevancy threshold and points on the plurality of rays outside the critical distance do not meet the relevancy threshold.

22.   The data visualization apparatus of claim 21, wherein the digital processing circuitry is further configured to adjust the critical distance in response to user input.

23.   The data visualization apparatus of claim 17, wherein the digital processing circuitry is further configured to:

re-determine relative relationships between each of the plurality of query objects and the body of data in response to user input; and

control the image device to rearrange positions of the displayed points in response to the re-determined relationship.

24.   The data visualization apparatus of claim 17, wherein the digital processing circuitry is further configured to:

delete an element from the body of data in response to user input;

re-determine relative relationships between each of the plurality of query objects and the body of data in response to deleting; and

control the image device to rearrange the positions of the displayed points in response to re-determining.

25.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to determine comprises digital processing circuitry configured to access data corresponding to the occurrence of textual information within a plurality of documents and the digital processing circuitry configured to control the image device comprises digital processing circuitry configured to depict usage of the textual information corresponding to portions of the query objects appearing within the documents via the image device.

26.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to determine comprises digital processing circuitry configured to:

organize data in the database and the plurality of query objects in an n-dimensional space; and

reduce a number n of dimensions in which the data in the database and the plurality of query objects are organized to two dimensions using a Sammon projection.

27.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to identify comprises digital processing circuitry configured to represent each of the plurality of query objects and each datum in the body of data as an n-dimensional vector in an n-dimensional vector space.

28.   The data visualization apparatus of claim 27, wherein the digital processing circuitry configured to determine comprises digital processing circuitry configured to calculate a similarity measure between each of the plurality of query objects and each datum of the body of data using some portion of the n-dimensional vectors.

29.   The data visualization apparatus of claim 28, wherein the digital processing circuitry configured to determine further comprises digital processing circuitry configured to:

reduce a number n of dimensions in which the body of data and the query objects are represented to three or fewer dimensions using a multi-dimensional scaling method, where the similarity measures between each of the plurality of query objects and the body of data are weighted more heavily than the similarity measures among data within the body of data; and

wherein the digital processing circuitry configured to display comprises digital processing circuitry configured to display points corresponding to the plurality of query objects and points corresponding to the body of data according to the three or fewer dimensions.

30.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to control the image device comprises digital processing circuitry configured to control the image device to display points corresponding to data from the database along each of the plurality of rays in two dimensions, wherein positions of the displayed points correspond to the relative relationships.

31.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to determine relative relationships comprises digital processing circuitry configured to:

determine thematic boundaries within each element contained in the database;

break elements into subelements at the determined thematic boundaries; and

determine relative relationships between each of the plurality of query objects and the subelements; and wherein the digital processing circuitry configured to control the image device to display points comprises digital processing circuitry configured to display points corresponding to subelements along each of the plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

32.   The data visualization apparatus of claim 17, wherein the digital processing circuitry configured to determine relative relationships comprises digital processing circuitry configured to:

break elements into subelements; and

determine relative relationships between each of the plurality of query objects and the subelements; and wherein the digital processing circuitry configured to control the image device to display points comprises digital processing circuitry configured to display points corresponding to subelements along each of the plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

33.   A computer-readable medium comprising computer usable code configured to cause digital processing circuitry to:

identify features of each of a plurality of query objects that allow comparison to a body of data stored in a database;

determine relative relationships between each of the plurality of query objects and the body of data; and

control an image device to depict points corresponding to data from the database along each of a plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

34.   The computer readable medium comprising computer usable code of claim 33, wherein the computer usable code configured to display includes computer usable code configured to display a small graphic entity at an end of each of the plurality of rays to represent a respective one of the plurality of query objects.

35.   The computer readable medium comprising computer usable code of claim 33, wherein the computer usable code configured to display includes computer usable code configured to display the plurality of rays to have a common origin.

36.   The computer readable medium comprising computer usable code of claim 35, wherein the computer usable code configured to display includes computer usable code configured to display the plurality of rays to radiate outwardly from the common origin at equally-spaced angles from one another.

37.   The computer readable medium comprising computer usable

code of claim 33, wherein the computer usable code configured to

display includes computer usable code configured to display the plurality

of rays to have a common origin and further comprising computer usable

code configured to determine a critical distance from the common origin,

wherein points on the plurality of rays falling within the critical distance

meet or exceed a relevancy threshold and points on the plurality of rays

outside the critical distance do not meet the relevancy threshold.

38.   The computer readable medium comprising computer usable

code of claim 37, wherein the computer usable code is further configured

to adjust the critical distance in response to user input.

39.   The computer readable medium comprising computer usable

code of claim 33, wherein the computer usable code is further configured

to:

re-determine relative relationships between each of the plurality of

query objects and the body of data in response to user input; and

control the image device to rearrange the positions of the

displayed points in response to the re-determined relationships.

40. The computer readable medium comprising computer usable code of claim 39, wherein the computer usable code is further configured to:

delete an element from the body of data in response to user input;

re-determine relative relationships between each of the plurality of query objects and the body of data in response to deleting; and

control the image device to rearrange the positions of the displayed points in response to re-determining.

41. The computer readable medium comprising computer usable code of claim 33, wherein the computer usable code configured to determine comprises computer usable code configured to access data corresponding to the occurrence of textual information within a plurality of documents and the computer usable code configured to control the image device comprises computer usable code configured to depict usage of the textual information within the documents that correspond to portions of the plurality of query objects.

42.   The computer readable medium comprising computer usable code of claim 33, wherein the computer usable code configured to determine comprises computer usable code configured to:

organize data in the database and the plurality of query objects in an n-dimensional space; and

reduce a number n of dimensions in which the data in the database and the plurality of query objects are organized to two dimensions using a Sammon projection.

43.   The computer readable medium comprising computer usable code of claim 33, wherein the computer usable code configured to identify comprises computer usable code configured to represent each of the plurality of query objects and each datum in the body of data as an n-dimensional vector in an n-dimensional vector space.

44.   The computer readable medium comprising computer usable code of claim 43, wherein the computer usable code configured to determine comprises computer usable code configured to calculate a similarity measure between each of the plurality of query objects and each datum of the body of data using some portion of the n-dimensional vectors.

45.   The computer readable medium comprising computer usable code of claim 44, wherein the computer usable code configured to determine further comprises computer usable code configured to:

reduce a number n of dimensions in which the body of data and the query objects are represented to three or fewer dimensions using a multi-dimensional scaling method, where the similarity measures between each of the plurality of query objects and the body of data are weighted more heavily than the similarity measures among data within the body of data; and

wherein the digital processing circuitry configured to display comprises digital processing circuitry configured to display points corresponding to the plurality of query objects and points corresponding to the body of data according to the three or fewer dimensions.

46.   The computer readable medium comprising computer usable code of claim 33, wherein the computer usable code configured to control the image device comprises computer usable code configured to control the image device to display points corresponding to data from the database along each of the plurality of rays in two dimensions, wherein positions of the displayed points correspond to the relative relationships.

47.   The computer readable medium comprising computer usable code of claim 33, wherein the computer usable code configured to determine comprises computer usable code configured to:

determine thematic boundaries within each element contained in the database;

break elements into subelements at the determined thematic boundaries; and

determine relative relationships between each of the plurality of query objects and the subelements; and wherein the computer usable code configured to control the image device comprises computer usable code configured to display points corresponding to subelements along each of the plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

48. The computer readable medium comprising computer usable code of claim 33, wherein the computer usable code configured to determine comprises computer usable code configured to:
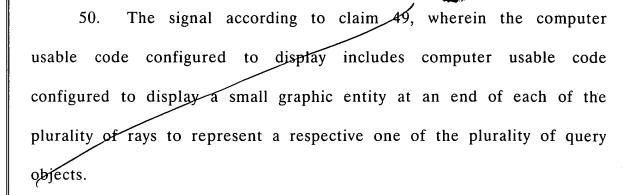
break elements into subelements; and

determine relative relationships between each of the plurality of query objects and the subelements; and wherein the computer usable code configured to control the image device comprises computer usable code configured to display points corresponding to subelements along each of the plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

49. A computer data signal embodied in a transmission medium comprising computer usable code configured to:
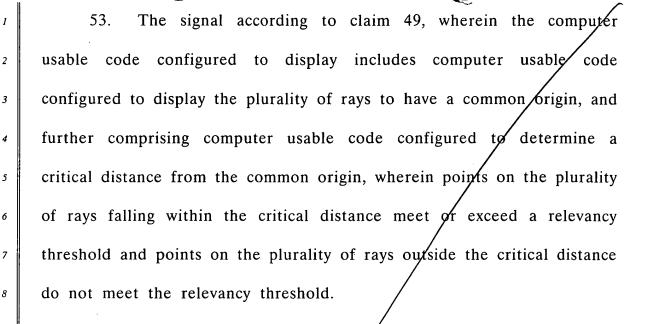
input a plurality of query objects into a data processing device;

determine relative relationships between each of the plurality of query objects and a body of data stored in a database; and

control an image device to depict points corresponding to data from the database along each of a plurality of rays, wherein positions of the displayed points correspond to the relative relationships.
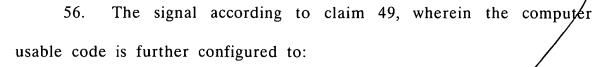
50.   The signal according to claim 49, wherein the computer usable code configured to display includes computer usable code configured to display a small graphic entity at an end of each of the plurality of rays to represent a respective one of the plurality of query objects.

51.   The signal according to claim 49, wherein the computer usable code configured to display includes computer usable code configured to display the plurality of rays to have a common origin.

52.   The signal according to claim 51, wherein the computer usable code configured to display includes computer usable code configured to display the plurality of rays as radiating outwardly from the common origin at equally-spaced angles from one another.

53. The signal according to claim 49, wherein the computer usable code configured to display includes computer usable code configured to display the plurality of rays to have a common origin, and further comprising computer usable code configured to determine a critical distance from the common origin, wherein points on the plurality of rays falling within the critical distance meet or exceed a relevancy threshold and points on the plurality of rays outside the critical distance do not meet the relevancy threshold.

54. The signal according to claim 53, wherein the computer usable code is further configured to adjust the critical distance in response to user input.

55. The signal according to claim 49, wherein the computer usable code is further configured to:

re-determine relative relationships between each of the plurality of query objects and the body of data in response to user input; and

control the image device to rearrange the positions of the displayed points in response to the re-determined relative relationships.

56. The signal according to claim 49, wherein the computer usable code is further configured to:

delete an element from the body of data in response to user input;

re-determine relative relationships between each of the plurality of query objects and the body of data in response to deletion; and

control the image device to rearrange the positions of the displayed points in response to re-determining.

57. The signal according to claim 49, wherein the computer usable code configured to determine comprises computer usable code configured to access data corresponding to the occurrence of textual information within a plurality of documents and the computer usable code configured to control the image device comprises computer usable code configured to depict usage of the textual information within the documents that correspond to portions of the plurality of query objects.

58. The signal according to claim 49, wherein the computer usable code configured to determine comprises computer usable code configured to:

organize data in the database and the plurality of query objects in an n-dimensional space; and

reduce a number n of dimensions in which the data in the database and the plurality of query objects are organized to two dimensions using a Sammon projection.

59. The signal according to claim 49, wherein the computer usable code configured to control the image device comprises computer usable code configured to control the image device to display points corresponding to data from the database along each of the plurality of rays in two dimensions, wherein positions of the displayed points correspond to the relative relationships.
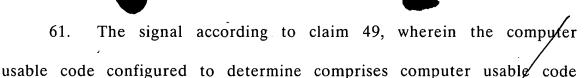
60.   The signal according to claim 49, wherein the computer usable code configured to determine comprises computer usable code configured to:

determine thematic boundaries within each document contained in the database;

break documents into subdocuments at the determined thematic boundaries; and

determine relative relationships between each of the plurality of query objects and the subdocuments; and wherein the computer usable code configured to control the image device comprises computer usable code configured to display points corresponding to subdocuments along each of the plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

61.   The signal according to claim 49, wherein the computer usable code configured to determine comprises computer usable code configured to:

break documents into subdocuments; and

determine relative relationships between each of the plurality of query objects and the subdocuments; and wherein the computer usable code configured to control the image device comprises computer usable code configured to display points corresponding to subdocuments along each of the plurality of rays, wherein positions of the displayed points correspond to the relative relationships.

62.   The signal according to claim 49, wherein the computer usable code configured to identify comprises computer usable code configured to represent each of the plurality of query objects and each datum in the body of data as an n-dimensional vector in an n-dimensional vector space.

63.   The signal according to claim 62, wherein the computer usable code configured to determine comprises computer usable code configured to calculate a similarity measure between each of the plurality of query objects and each datum of the body of data using some portion of the n-dimensional vectors.

64.   The signal according to claim 63, wherein the computer usable code configured to determine further comprises computer usable code configured to:

reduce a number n of dimensions in which the body of data and the query objects are represented to three or fewer dimensions using a multi-dimensional scaling method, where the similarity measures between each of the plurality of query objects and the body of data are weighted more heavily than the similarity measures among data within the body of data; and
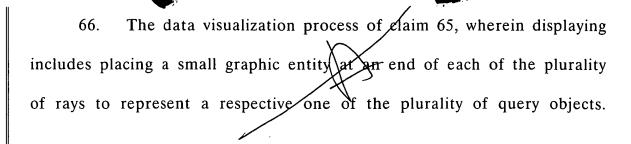
wherein the digital processing circuitry configured to display comprises digital processing circuitry configured to display points corresponding to the plurality of query objects and points corresponding to the body of data according to the three or fewer dimensions.

65.   A data visualization process comprising:

inputting a plurality of query objects into in a data processor;

determining relative relationships between each of the plurality of query objects and a body of data; and

displaying a point along each of a plurality of rays for each of the plurality of query objects, wherein positions of the displayed points correspond to the relative relationships between a respective one of the plurality of query objects and the body of data.

66. The data visualization process of claim 65, wherein displaying includes placing a small graphic entity at an end of each of the plurality of rays to represent a respective one of the plurality of query objects.

67. The data visualization process of claim 65, wherein determining relative relationships comprises determining relative relationships between each of the plurality of query objects and a body of data stored in a database in the data processor.

68. The data visualization process of claim 65, further comprising redetermining relative relationships in response to user input criteria.

69. The data visualization process of claim 65, wherein displaying comprises displaying the plurality of rays to have a common origin.

70. The data visualization process of claim 65, wherein displaying comprises displaying the plurality of rays to have a common origin and to radiate outwardly from the common origin at equally-spaced angles from one another.

71.   The process of claim 69, further comprising determining a critical distance from the common origin, wherein points on the plurality of rays falling within the critical distance meet or exceed a relevancy threshold and points on the plurality of rays outside the critical distance do not meet the relevancy threshold.

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